REMARKS

Claims 1-16 are the present application.

The Office Action objects to claim 1 in that it is not as "previously presented". This is true if one is referring to the original Amendment dated 6-11-04, when line "b)" of that claim was inadvertently dropped, in using the word processor, before the word "detection". However, such claim was presented in full by Amendment dated 3-20-03, so it really was "previously presented" and is now correct as it appears in the Compliant Amendment, also dated 6-11-04, that was sent to the PTO with a Response to Notice of Noncompliant Amendment, which Response was dated 7-30-04. Accordingly, this objection is believed met.

The Office Action rejection of claims 1-5, 7-9, 11 & 13-16, as obvious under 35 USC 103 (a) over Hill, Jr. et al.('285), herein Hill, in view of Hertel et al. ('531), herein "Hertel", is respectfully traversed. Hill employs a laser to stimulate emissions as a means of detecting the presence of rocket plumes in the atmosphere. However, this method meets with at least two problems; a) laser beams are blocked by clouds (due to beam dissipation and reflection) and b) where to point the laser beam in the first place, to find the missile or rocket plume, is a considerable obstacle.

Hertel also employs laser beams, which would meet with the same obstacles as Hill, above.

Thus neither Hill nor Hertel can detect rocket or missile plumes through a cloud cover and lack the utility of the present invention as claimed. And as noted above, laser beams do not pass through clouds and even if they did, how does one locate the emission plume in the first place, so as to know where to point the laser. That is, the plume locating methods of the above two patents simply won't work, with or without a lock-in amplifier.

Applicants provide, per present claims 1 & 16, a rocket plume detector that employs a sensor with a narrow band spectral filter at a wavelength that is radiated through clouds and thus applicants' sensor can detect a missile, as it is launched, through a cloud cover.

Applicants, per claims 1 & 16, also employ a lock-in amplifier, which can detect fluctuation frequency differences between between say, a sodium lamp that fluctuates at

60 hertz and sodium in a rocket plume, that fluctuates at 50 hertz, so as to screen out the former in favor of the latter and detect the rocket plume early in its launch stage.

Again, in order for a lock-in amplifier to be effective, one has to have a system that sees the launch plume through clouds and only applicants provide such invention, as defined in their claims 1 & 16 herein.

As for the Hasson reference, while this patent is directed to passive detection of a luminous target, it discloses an airborne system 10, wherein the target 12 is a rocket emitting a plume which is a source of radiation reflected (via rays 100) from cloud 98, to be viewed by the system 10, per lines 59-67, in col. 5 and lines 1-3 in col. 6. That is, this system discloses detecting only light reflected off a cloud rather than through a cloud, in its own words and also with no suggestion of employing a lock-in amplifier to distinguish between a sodium lamp at 60 hertz and sodium in a rocket plume at 50 hertz.

The Office Action at page 5, places much stock in Hasson's acquisition of a target 12 by his detector 10, "through clouds (see figure 3)". However, looking at Figure 3, one sees that none of the rays 100 point to the target 12, so such rays are indicated as reflecting rays, which interpretation is confirmed by Hasson's disclosure at col. 5, lines 59 to col. 6, line 3, where it is said in two places that these rays 100 are *reflected* from cloud 98. This means that the site of the rocket or missile plume 12 is not accurately located and that the detectors 10 of Figure 3 must wait until the rays 100 are reflected off the cloud 98 for notice of the launch or missile 104 from a vague location and on an uncertain trajectory.

Thus none of the above three references suggest employing a lock-in amplifier to distinguish rocket plume emissions through clouds, nor is the combination of Hertel with the above two references suggested except by applicants' own disclosure.

That is, to establish a prima facie case of obviousness:

1. There must be some suggestion or motivation in the references to combine reference teachings;

2. There must be a reasonable expectation of success and

3. The prior art references, when combined, must teach or suggest all of the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success, must both be found in the prior art and not be based on

applicants' disclosure; *In re Vaeck*, 20 USPQ 2nd 1438 (1991), as noted in MPE P 706.02(j).

Note that Hertel et al employ a plurality of light sources which would require a like number of lock-in amplifiers and further disclose detectors on the opposite side of a cloudy medium, per its Figure 1, so that a different structure is disclosed which does not suggest applicants' claimed structure of a single passive detector above the cloud cover, with a single lock-in amplifier, also above such cloud cover. That is, applicants' invention as claimed, provides a detector that the separates a modulated signal from its background for, e.g., readily distinguishing a sodium rocket plume from a sodium street lamp.

Likewise, applicants' claims 2-15, are believed distinguished over the above applied 3 references in view of their dependence from claim 1, which is believed novel thereover, as discussed above. Thus the rejection of applicants' claims 6 & 12 as obvious under 35 USC 103 (a) over Hill, as modified by Hertel and further in view of Hassan, ('452), is respectfully traversed.

In view of the foregoing, the claims of record, are believed distinguished over the applied references and in condition for allowance.

In accordance with Section 714.01 of the M.P.E.P., the following information is presented in the event that a call may be deemed desirable by the Examiner to: Thomas C. Stover, (781) 377-3779.

Respectfully submitted,

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